UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR		ATTORNEY DOCKET NO.
09/505,209	02/16/00	ATKINSON	B	2265-11-1

HM12/0509

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EXAMINER	
KERR, J	

ART UNIT	PAPER NUMBER
1633	7

DATE MAILED: 05/09/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No.	Applicant(s)	
	09/505,209	ATKINSON ET AL.	
	Examiner	Art Unit	
	Janet Kerr	1633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-38 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-38 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

15) ☒ Notice of References Cited (PTO-892)
16) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
17) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4 .
18) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
19) ☐ Notice of Informal Patent Application (PTO-152)
20) ☐ Other: .

DETAILED ACTION

Claims 1-38 are being examined on the merits.

Priority

An application in which the benefits of an earlier application are desired must contain a specific reference to the prior application(s) in the first sentence of the specification (37 CFR 1.78). If applicant desires priority under 35 U.S.C. 120 based upon a previously filed copending application, specific reference to the earlier filed application must be made in the instant application. This should appear as the first sentence of the specification following the title, preferably as a separate paragraph. The status of nonprovisional parent application(s) (whether patented or abandoned) should also be included. If a parent application has become a patent, the expression "now Patent No._____" should follow the filing date of the parent application. If a parent application has become abandoned, the expression "now abandoned" should follow the filing date of the parent application.

Specification

The use of the trademark "Bone Protein" has been noted in this application. It should be capitalized wherever it appears and be accompanied by the generic terminology.

Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any manner which might adversely affect their validity as trademarks.

Claim Objections

Claims 9 and 33 are objected to because of the following informalities: in claim 9, "insulin growth factor I should be changed to "insulin-like growth factor I"; and in claim 33, "mensical" should be changed to "meniscal".

Claims 14 and 15 are also objected to because it is improper to incorporate into a claim, a reference to tables. See MPEP 2173.05(s).

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 12 is rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claim 12 is directed to a product for repair of cartilage lesions wherein the product comprises "Bone Protein". While the specification (see page 3, lines 7-9) discloses that Bone Protein can be purchased from Sulzer Orthopedics Biologics, and is a naturally derived mixture of proteins isolated from demineralized bovine bones that has osteogenic activity in vitro and in vivo, the specification does not describe how to make the "Bone Protein". The specification does not disclose if the bovine bones are from fetal, newborn, or adult bovines (the composition of the bones at these stages of development are known in the art to be different), or how the protein was derived from the bones. Were the bones merely demineralized? Were the demineralized bones subjected to an extraction process, and if so, what type of extraction process was used? Given that the specification does not disclose the proteinaceous components, or the relative amounts of the proteinaceous components in the "naturally derived mixture of proteins isolated from the

demineralized bone proteins", the skilled artisan could not consistently and reproducibly make the "Bone Protein" without undue experimentation. Thus, the specification is non-enabling for a product comprising "Bone Protein".

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-38 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1, 2, 3, 24, 25, 26, 37 and 38 are rendered vague and indefinite by the phrase "composition associated with said matrix" because it is unclear what type of association is intended, i.e., how is the composition associated with the matrix?

Claims 2, 25, 26, and 37 are rendered vague and indefinite by the phrase "a bone-derived osteogenic or chondrogenic formulation" because it is unclear what type of derivation is intended, and it is unclear how the osteogenic formulation is distinguished from the chondrogenic formulation.

Claims 2, 3, 19, 25, 26, and 31 are rendered vague and indefinite because it is unclear if the exogenous TGFβ protein is ten-fold (or 100-fold with respect to claims 19 and 31) greater than one BMP or if the exogenous TGFβ protein is ten-fold greater than the total amount of BMPs if more than one BMP is in the composition.

Claims 2 and 25 are rendered vague and indefinite by the term "exogenous" as it is unclear as to what "exogenous" is relative, i.e., the bone in which the formulation is derived or the animal in which the cartilage lesion will be repaired?

Claim 3 is rendered vague and indefinite because it is unclear if the exogenous TGFβ protein is ten-fold greater than one BMP or if the exogenous TGFβ protein is ten-fold greater than the total amount of BMPs if more than one BMP is in the composition.

Claim 4 is rendered vague and indefinite by the phrase "TGFβ superfamily proteins" because the phrase lacks antecedent basis.

Claim 11 is confusing because it is unclear if the TGFβ 1, BMP-2, BMP-3, and BMP-7 is in addition to the TGFβ 1, BMP-2, BMP-3, and BMP-7 recited in claim 1. It is suggested that applicants amend claim 11 by deleting the elements TGFβ 1, BMP-2, BMP-3, and BMP-7 recite "wherein said mixture of proteins further comprises...".

Claim 12 is rendered vague and indefinite by the phrase "Bone Protein" because it is unclear from the claim and the specification what "Bone Protein" is, i.e., what is the composition of Bone Protein? The claim is also vague and indefinite as it is unclear if the mixture of proteins further comprises "Bone Protein" or if the mixture of proteins is "Bone Protein". The metes and bounds of the claim is unclear.

Claims 14 and 15 are rendered vague and indefinite by the term "about" preceding the scores because it is unclear what characteristics set forth in the tables are encompassed in a score of from about 1.0 to about 3.5 for example. The metes and bounds of the claims are unclear.

Claim 14 is rendered vague and indefinite by the phrases "about 3.5" and "at least about 1.2" because it is unclear what characteristics set forth in the tables (wherein the scores are in whole numbers) are encompassed in a fractionated score. The metes and bounds of the claims are unclear.

Claims 24-26, and 37 are rendered vague and indefinite because, as written, the claims appear to be incomplete. The preamble recites a method for repair of cartilage lesions, yet the only steps recited in the method are "implanting" and "fixing"; it is unclear at what point in the method the lesion is repaired.

Claim 37 is rendered vague and indefinite as it is unclear why there is a "." on line 15 of the claim. Claim 37 is further rendered vague and indefinite by the phrase "said segmental defect" on line 17 as this phrase lacks antecedent basis.

Claim 12 contains the trademark/trade name Bone Protein. Where a trademark or trade name is used in a claim as a limitation to identify or describe a particular material or product, the claim does not comply with the requirements of 35 U.S.C. 112, second paragraph. See *Ex parte Simpson*, 218 USPQ 1020 (Bd. App. 1982). The claim scope is uncertain since the trademark or trade name cannot be used properly to identify any particular material or product. A trademark or trade name is used to identify a source of goods, and not the goods themselves. Thus, a trademark or trade name does not identify or describe the goods associated with the trademark or trade name. In the present case, the trademark/trade name is used to identify/describe a complex mixture of bone proteins and, accordingly, the identification/description is indefinite.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-8, 10-22, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lucas *et al.* (J. Biomed. Mater. Res.:Applied Biomaterials, 23(A1):23-39, 1989).

Lucas *et al.* teach a formulation comprising a collagen based delivery vehicle (i.e., a cartilage repair matrix suitable for conforming to a defect in cartilage), and a cartilage-inducing composition admixed with the repair matrix (i.e., associated with the repair matrix), wherein the cartilage-inducing composition contains a mixture of proteins extracted from bovine bone (see, e.g., page 24, first and second full paragraphs, page 25, under "Preparation of *in vivo* delivery vehicle). Bovine bone intrinsically comprises the claim-designated TGFβ superfamily of proteins (wherein the TGFβ is exogenous relative to the cartilage repair matrix and relative to the animal in which the product is implanted), bone matrix proteins, growth factors and serum proteins, as acknowledged in Table 6 on page 79 of the instant application. Lucas *et al.* also teach that the collage based delivery vehicle is noninflammatory, biodegradable and promotes cell attachment (see, e.g., page 35, third full paragraph). In addition, Lucas *et al.* teach ectopic cartilage formation as a result of implanting the formulation *in vivo* (see, e.g., pages 30-33).

Lucas *et al.* do not teach the claim-designated amounts of the various components of the cartilage-inducing composition. However, in view of the teachings of Lucas *et al.* that an optimal delivery vehicle would release the inductive protein(s) at an effective dose over a time period coincident with accumulation of host target cells, and that matrix components which stimulate chondrogenesis are "extracted" by warm body fluids and exert an inductive influence upon cell populations at the implantation site, and further in view of the teachings of Lucas *et al.* that successful delivery of inductive proteins requires an adequate amount of bioactive factor to be delivered to target cells, it would have been obvious to one of ordinary skill in the art to alter the relative amounts of the components in the cartilage inducing formulation for the purpose of optimizing the delivery and effectiveness of the cartilage-inducing proteins at the implantation site. In addition, it would have been obvious to one of ordinary skill in the art to optimize the ratio of cartilage repair matrix to protein in view of the teachings of Lucas *et al.* that the relative amounts of cartilage repair matrix to protein significantly affects the ability of the product to induce

chondrogenesis (see e.g., page 29-33). It would have been *prima facie* obvious to the ordinary practitioner to perform routine optimization of the protein concentrations to arrive at the claim products. See *In re Aller*, 105 USPQ 233 at 235; "...where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation."

Thus the claimed invention as a whole was clearly *prima facie* obvious at the time the claimed invention was made especially in the absence of sufficient, clear, and convincing evidence to the contrary.

Claims 1-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li *et al.* (U.S. Patent No. 5,681,353, 1997) taken with Lucas *et al.* (J. Biomed. Mater. Res.:Applied Biomaterials, 23(A1):23-39, 1989).

Li *et al.* teach a meniscal augmentation device for implantation into a segmental defect of a meniscus such that the composite formed by the meniscus and the device has an *in vivo* outer surface contour substantially the same as a natural meniscus without a segmental defect, and which establishes a biocompatible and an at least partially bioresorbable scaffold adapted for ingrowth of fibrochondrocytes. The definition of a segmental defect encompasses a tear or lesion, including radial tears, horizontal tears, bucket handle tears, and complex tears (see, e.g., column 2, lines 30-49). The device is comprised of collagen fibers obtained from processing of bovine tendon (see, e.g., column 8, line 9 through column 10, line 5, and column 11, lines 24-37) and can include adhesion molecules and growth factors interspersed throughout and incorporated throughout the fibers. The adhesion molecules include but are not limited to chondronectin, osteonectin, and fibronectin. The growth factors include, but are not limited to, TGF-α, TGF-β, fibroblast growth factor, epidermal growth factor, and platelet derived growth factor (see, e.g., column 6, lines 40-60). The device is made by placing the collagen fibers, growth factors and adhesion factors into a mold having a shape defined by the segmental defect in the meniscus which is to be repaired (see, e.g., column 6, lines 61-67, and column 12, lines 6-16). Li *et al.* also teach

a method for repair of cartilage lesions comprising implanting and fixing the product into a cartilage lesion (see, e.g., column 16, lines 35-46).

Li *et al.* do not teach incorporating into the repair matrix all of the claim-designated proteins in the claim-designated percentages or ratios. However, Lucas *et al.* teach a product comprising a collagen based delivery vehicle (i.e., a cartilage repair matrix suitable for conforming to a defect in cartilage), and a cartilage-inducing composition admixed with the repair matrix (i.e., associated with the repair matrix), wherein the cartilage-inducing composition contains a mixture of proteins extracted from bovine bone (see, e.g., page 24, first and second full paragraphs, page 25, under "Preparation of *in vivo* delivery vehicle). Bovine bone intrinsically comprises the claim-designated TGFβ superfamily of proteins, bone matrix proteins, growth factors and serum proteins, as acknowledged in Table 6 on page 79 of the instant application. Lucas *et al.* also teach that the collage based delivery vehicle is noninflammatory, biodegradable and promotes cell attachment (see, e.g., page 35, third full paragraph). In addition, Lucas *et al.* teach ectopic cartilage formation as a result of implanting the formulation *in vivo* (see, e.g., pages 30-33). Although Lucas *et al.* do not teach the claim-designated amounts of the various components of the cartilage-inducing composition, in view of the teachings of Lucas *et al.* that an optimal delivery vehicle would release the inductive protein(s) at an effective dose over a time period coincident with accumulation of host target cells, and that matrix components which stimulate chondrogenesis are "extracted" by warm body fluids and exert an inductive influence upon cell populations at the implantation site, and further in view of the teachings of Lucas *et al.* that successful delivery of inductive proteins requires an adequate amount of bioactive factor to be delivered to target cells, it would have been obvious to one of ordinary skill in the art to alter the relative amounts of the components in the cartilage inducing formulation for the purpose of optimizing the delivery and effectiveness of the cartilage-inducing proteins at the implantation site. In addition, it would have been obvious to one of ordinary skill in the art to optimize the ratio of cartilage repair matrix to protein in view of the teachings of Lucas *et al.* that the relative amounts of cartilage repair matrix to protein significantly affects the ability of the product to induce

chondrogenesis (see e.g., page 29-33). It would have been *prima facie* obvious to the ordinary practitioner to perform routine optimization of the protein concentrations to arrive at the claim products. See *In re Aller*, 105 USPQ 233 at 235; "...where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation."

It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to substitute the cartilage-inducing protein composition in the product of Li *et al.* with the cartilage inducing protein composition of Lucas *et al.* as Lucas *et al.* clearly demonstrate that the cartilage inducing protein composition obtained from bovine bone effectively induces cartilage formation at the site of implantation. Thus, one of ordinary skill in the art would have been motivated to use the protein composition of Lucas *et al.* in the meniscal augmentation device of Li *et al.* as the device of Li *et al.* can be shaped to any desired figure, such as a sheet, or can be conformed to the shape of the meniscal defect, and implanted and fixed into the defect in a subject in need thereof.

Thus the claimed invention as a whole was clearly *prima facie* obvious at the time the claimed invention was made especially in the absence of sufficient, clear, and convincing evidence to the contrary.

Claims 37-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li *et al.* (U.S. Patent No. 5,681,353, 1997) taken with Lucas *et al.* (J. Biomed. Mater. Res.:Applied Biomaterials, 23(A1):23-39, 1989), and Stone *et al.* (J. Bone and Joint Surgery, 79-A:1770-1777, 1997).

Li *et al.* teach a meniscal augmentation device for implantation into a segmental defect of a meniscus such that the composite formed by the meniscus and the device has an *in vivo* outer surface contour substantially the same as a natural meniscus without a segmental defect, and which establishes a biocompatible and an at least partially bioresorbable scaffold adapted for ingrowth of fibrochondrocytes. The definition of a segmental defect encompasses a tear or lesion,

including radial tears, horizontal tears, bucket handle tears, and complex tears (see, e.g., column 2, lines 30-49). The device is comprised of collagen fibers obtained from processing of bovine tendon (see, e.g., column 8, line 9 through column 10, line 5, and column 11, lines 24-37) and can include adhesion molecules and growth factors interspersed throughout and incorporated throughout the fibers. The adhesion molecules include but are not limited to chondronectin, osteonectin, and fibronectin. The growth factors include, but are not limited to, TGF-α, TGF-β, fibroblast growth factor, epidermal growth factor, and platelet derived growth factor (see, e.g., column 6, lines 40-60). The device is made by placing the collagen fibers, growth factors and adhesion factors into a mold having a shape defined by the segmental defect in the meniscus which is to be repaired (see, e.g., column 6, lines 61-67, and column 12, lines 6-16). Li *et al.* also teach a method for repair of cartilage lesions comprising implanting and fixing the product into a cartilage lesion (see, e.g., column 16, lines 35-46).

Li *et al.* do not teach using two products, wherein the first product is in a sheet form and the other product is configured to replace cartilage removed from a segmental defect, and wherein the first product is implanted between an edge of the lesion and the second product to provide an interface between the lesion and the second product. However, Stone *et al.* teach that bonding of a collagenous meniscal implant to lesion edges is more difficult than bonding to the thicker vascular periphery of a lesion and may leave the implant unstable in the early postoperative period (see, e.g., page 1776, left column). In view of this teaching of Stone *et al.*, it would have been obvious to one of ordinary skill in the art to provide two repair matrix/protein products, the first in the form of a sheet and the second in the form of the segmental defect, and to implant the first product to between an edge of the lesion and the second product to provide an interface between the lesion and the second product for the purpose of increasing the stability of the implant in the early postoperative period.

The above references do not teach incorporating into the repair matrix all of the claim-designated proteins in the claim-designated percentages or ratios. However, Lucas *et al.* teach a product comprising a collagen based delivery vehicle (i.e., a cartilage repair matrix suitable for

conforming to a defect in cartilage), and a cartilage-inducing composition admixed with the repair matrix (i.e., associated with the repair matrix), wherein the cartilage-inducing composition contains a mixture of proteins extracted from bovine bone (see, e.g., page 24, first and second full paragraphs, page 25, under "Preparation of *in vivo* delivery vehicle). Bovine bone intrinsically comprises the claim-designated TGFβ superfamily of proteins, bone matrix proteins, growth factors and serum proteins, as acknowledged in Table 6 on page 79 of the instant application. Lucas *et al.* also teach that the collage based delivery vehicle is noninflammatory, biodegradable and promotes cell attachment (see, e.g., page 35, third full paragraph). In addition, Lucas *et al.* teach ectopic cartilage formation as a result of implanting the formulation *in vivo* (see, e.g., pages 30-33).

Although Lucas *et al.* do not teach the claim-designated amounts of the various components of the cartilage-inducing composition, in view of the teachings of Lucas *et al.* that an optimal delivery vehicle would release the inductive protein(s) at an effective dose over a time period coincident with accumulation of host target cells, and that matrix components which stimulate chondrogenesis are "extracted" by warm body fluids and exert an inductive influence upon cell populations at the implantation site, and further in view of the teachings of Lucas *et al.* that successful delivery of inductive proteins requires an adequate amount of bioactive factor to be delivered to target cells, it would have been obvious to one of ordinary skill in the art to alter the relative amounts of the components in the cartilage inducing formulation for the purpose of optimizing the delivery and effectiveness of the cartilage-inducing proteins at the implantation site. In addition, it would have been obvious to one of ordinary skill in the art to optimize the ratio of cartilage repair matrix to protein in view of the teachings of Lucas *et al.* that the relative amounts of cartilage repair matrix to protein significantly affects the ability of the product to induce chondrogenesis (see e.g., page 29-33). It would have been *prima facie* obvious to the ordinary practitioner to perform routine optimization of the protein concentrations to arrive at the claim products. See *In re Aller*, 105 USPQ 233 at 235; "...where the general conditions of a claim are

disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation."

It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to substitute the cartilage-inducing protein composition in the product of Li *et al.* with the cartilage inducing protein composition of Lucas *et al.* as Lucas *et al.* clearly demonstrate that the cartilage inducing protein composition obtained from bovine bone effectively induces cartilage formation at the site of implantation. Thus, one of ordinary skill in the art would have been motivated to use the protein composition of Lucas *et al.* in the meniscal augmentation device of Li *et al.* as the device of Li *et al.* can be shaped to any desired figure, such as a sheet, or can be conformed to the shape of the meniscal defect, and implanted and fixed into the defect in a subject in need thereof. Moreover, providing two repair matrix/protein products, the first in the form of a sheet and the second in the form of the segmental defect, and implanting the first product between an edge of the lesion and the second product to provide an interface between the lesion the second product for the purpose of increasing the stability of the implant in the early postoperative period implanting the device (cartilage repair products) would have been obvious in view of the teachings of Stone *et al.* that bonding of a collagenous meniscal implant to lesion edges is more difficult than bonding to the thicker vascular periphery of a lesion and may leave the implant unstable in the early postoperative period (see, e.g., page 1776, left column).

Thus the claimed invention as a whole was clearly *prima facie* obvious at the time the claimed invention was made especially in the absence of sufficient, clear, and convincing evidence to the contrary.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686

F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-38 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 2, 4-7, 11, 13-15, 27, 33, 46-48, 50, 43, 54, 69, 72-76, 81, 82, 85, 89-94, 96, and 97 of copending Application No. 09/250,370 in view of Li *et al.* (U.S. Patent No. 5,681,353, 1997) taken with Lucas *et al.* (J. Biomed. Mater. Res.:Applied Biomaterials, 23(A1):23-39, 1989).

The claims of the instant application and copending Application No. 09/250,370 are directed to products for cartilage repair comprising cartilage repair matrices and cartilage-inducing composition comprising growth factors, extracellular matrix proteins, and serum proteins, and methods of using the products. While the claims of the instant application and the claims of the copending application differ in the recitation of the specific protein components and the percentages of the specific components in the product compositions, the claimed products in the instant application and the copending application are not limited to the recited protein components (i.e., the products "comprise" but are not limited to the recited proteins, and thus the products of the instant invention encompass the products of copending Application No. 09/250,370). In view of teachings of Li *et al.* and Lucas *et al.* (see the above 35 U.S.C. 103 rejections) that products comprising an admixture of the claim-designated cartilage-inducing proteins, growth factors, and adhesion proteins (i.e., extracellular matrix proteins) associated with the claim-designated cartilage repair matrix, are known in the art, and in view of the teachings in the references that the types of proteins and amounts of the proteins should be optimized such that implantation of the product(s) results in reparation of a cartilage lesion, it would have been

obvious to one of ordinary skill in the art to optimize the protein components and the relative amounts of the protein components of the claimed products in the instant application and copending Application No. 09/250,370 to provide a cartilage lesion repair product for the purpose of implanting the products into a cartilage defect to repair the defect in a subject in need thereof.

This is a provisional obviousness-type double patenting rejection.

No claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Janet M. Kerr whose telephone number is (703) 305-4055. Should the examiner be unavailable, inquiries should be directed to Deborah Clark, Supervisory Primary Examiner of Art Unit 1633, at (703) 305-4051. Any administrative or procedural questions should be directed to Kimberly Davis, Patent Analyst, at (703) 305-3015. Papers related to this application may be submitted to Group 1600 by facsimile transmission. Papers should be faxed to Group 1600 via the PTO Fax Center located in Crystal Mall 1. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The CM1 Fax Center number is (703) 305-7401.

Janet M. Kerr, Ph.D.
Patent Examiner
Group 1600

DEBORAH J. R. CLARK
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1600